

SEQUENCE LISTING

<110> Haruo Sugiyama
Chugai Seiyaku Kabushiki Kaisha
Sumitomo Pharmaceuticals Company, Limited

<120> HLA-A24-RESTRICTED CANCER ANTIGEN PEPTIDES

<130> 540883HT

<140> PCT/JP03/07463

<141> 2003-06-12

<150> JP 2002-171518

<151> 2002-06-12

<150> JP 2002-275572

<151> 2002-09-20

<160> 68

<210> 1

<211> 449

<212> PRT

<213> Homo sapiens

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1 5 10 15

Ser Leu Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala
20 25 30

Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr
35 40 45

Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro
50 55 60

Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly
65 70 75 80

Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe
85 90 95

Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe
100 105 110

Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe
115 120 125

Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile
130 135 140

Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr
145 150 155 160

Gly	His	Thr	Pro	Ser	His	His	Ala	Ala	Gln	Phe	Pro	Asn	His	Ser	Phe	165	170	175
Lys	His	Glu	Asp	Pro	Met	Gly	Gln	Gln	Gly	Ser	Leu	Gly	Glu	Gln	Gln	180	185	190
Tyr	Ser	Val	Pro	Pro	Pro	Val	Tyr	Gly	Cys	His	Thr	Pro	Thr	Asp	Ser	195	200	205
Cys	Thr	Gly	Ser	Gln	Ala	Leu	Leu	Leu	Arg	Thr	Pro	Tyr	Ser	Ser	Asp	210	215	220
Asn	Leu	Tyr	Gln	Met	Thr	Ser	Gln	Leu	Glu	Cys	Met	Thr	Trp	Asn	Gln	225	230	235
Met	Asn	Leu	Gly	Ala	Thr	Leu	Lys	Gly	Val	Ala	Ala	Gly	Ser	Ser	Ser	245	250	255
Ser	Val	Lys	Trp	Thr	Glu	Gly	Gln	Ser	Asn	His	Ser	Thr	Gly	Tyr	Glu	260	265	270
Ser	Asp	Asn	His	Thr	Thr	Pro	Ile	Leu	Cys	Gly	Ala	Gln	Tyr	Arg	Ile	275	280	285
His	Thr	His	Gly	Val	Phe	Arg	Gly	Ile	Gln	Asp	Val	Arg	Arg	Val	Pro	290	295	300
Gly	Val	Ala	Pro	Thr	Leu	Val	Arg	Ser	Ala	Ser	Glu	Thr	Ser	Glu	Lys	305	310	315
Arg	Pro	Phe	Met	Cys	Ala	Tyr	Pro	Gly	Cys	Asn	Lys	Arg	Tyr	Phe	Lys	325	330	335
Leu	Ser	His	Leu	Gln	Met	His	Ser	Arg	Lys	His	Thr	Gly	Glu	Lys	Pro	340	345	350
Tyr	Gln	Cys	Asp	Phe	Lys	Asp	Cys	Glu	Arg	Arg	Phe	Ser	Arg	Ser	Asp	355	360	365
Gln	Leu	Lys	Arg	His	Gln	Arg	Arg	His	Thr	Gly	Val	Lys	Pro	Phe	Gln	370	375	380
Cys	Lys	Thr	Cys	Gln	Arg	Lys	Phe	Ser	Arg	Ser	Asp	His	Leu	Lys	Thr	385	390	395
His	Thr	Arg	Thr	His	Thr	Gly	Lys	Thr	Ser	Glu	Lys	Pro	Phe	Ser	Cys	405	410	415
Arg	Trp	Pro	Ser	Cys	Gln	Lys	Lys	Phe	Ala	Arg	Ser	Asp	Glu	Leu	Val	420	425	430
Arg	His	His	Asn	Met	His	Gln	Arg	Asn	Met	Thr	Lys	Leu	Gln	Leu	Ala	435	440	445

Leu

<210> 2
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 2
Arg Tyr Phe Pro Asn Ala Pro Tyr Leu
1 5

<210> 3
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<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 3
Arg Tyr Pro Gly Val Ala Pro Thr Leu
1 5

<210> 4
<211> 9
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 4
Arg Tyr Pro Ser Cys Gln Lys Lys Phe
1 5

<210> 5
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 5
Ala Tyr Leu Pro Ala Val Pro Ser Leu
1 5

<210> 6
<211> 9
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 6

Asn Tyr Met Asn Leu Gly Ala Thr Leu

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5

<210> 7

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 7

Arg Val Pro Gly Val Ala Pro Thr Leu

1

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<210> 8

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 8

Arg Met Phe Pro Asn Ala Pro Tyr Leu

1

5

<210> 9

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 9

Arg Trp Pro Ser Cys Gln Lys Lys Phe

1

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<210> 10

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 10

Gln Tyr Arg Ile His Thr His Gly Val Phe
1 5 10

<210> 11
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 11
Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe
1 5 10

<210> 12
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 12
Arg Tyr Phe Pro Asn Ala Pro Tyr Phe
1 5

<210> 13
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 13
Arg Tyr Phe Pro Asn Ala Pro Tyr Trp
1 5

<210> 14
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 14
Arg Tyr Phe Pro Asn Ala Pro Tyr Ile
1 5

<210> 15

<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 15
Arg Tyr Phe Pro Asn Ala Pro Tyr Met
1 5

<210> 16
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 16
Arg Tyr Pro Gly Val Ala Pro Thr Phe
1 5

<210> 17
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 17
Arg Tyr Pro Gly Val Ala Pro Thr Trp
1 5

<210> 18
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 18
Arg Tyr Pro Gly Val Ala Pro Thr Ile
1 5

<210> 19
<211> 9
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 19

Arg Tyr Pro Gly Val Ala Pro Thr Met

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<210> 20

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 20

Arg Tyr Pro Ser Cys Gln Lys Lys Trp

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<210> 21

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 21

Arg Tyr Pro Ser Cys Gln Lys Lys Leu

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<210> 22

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 22

Arg Tyr Pro Ser Cys Gln Lys Lys Ile

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<210> 23

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 23

Arg Tyr Pro Ser Cys Gln Lys Lys Met

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<210> 24
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 24
Ala Tyr Leu Pro Ala Val Pro Ser Phe
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<210> 25
<211> 9
<212> PRT
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 25
Ala Tyr Leu Pro Ala Val Pro Ser Trp
1 5

<210> 26
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 26
Ala Tyr Leu Pro Ala Val Pro Ser Ile
1 5

<210> 27
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 27
Ala Tyr Leu Pro Ala Val Pro Ser Met
1 5

<210> 28
<211> 9
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 28

Asn Tyr Met Asn Leu Gly Ala Thr Phe

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<210> 29

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 29

Asn Tyr Met Asn Leu Gly Ala Thr Trp

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<210> 30

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 30

Asn Tyr Met Asn Leu Gly Ala Thr Ile

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<210> 31

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 31

Asn Tyr Met Asn Leu Gly Ala Thr Met

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5

<210> 32

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 32

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser
 1 5 10 15

Ala Ser His Leu Glu
 20

<210> 33
 <211> 3857
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: The DNA region from position 1 to position 1550 is derived from human, and the DNA region from position 1551 to position 3857 is derived from mouse.

<400> 33
 aagcttactc tctggcacca aactccatgg gatgattttt cttctagaag agtccagggtg 60
 gacaggtaag gagtgggagt cagggagttcc agttcaggga cagagattac gggatgaaaa 120
 gtgaaaggag agggacgggg cccatgccga gggtttctcc cttgtttctc agacagctct 180
 tgggccaaga ttcaggggaga cattgagaca gacgcttggt cacagaagca gaggggtcag 240
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 ggattgggga gtcccagcct tggggattcc ccaactccgc agtttctttt ctccctctcc 360
 caacctatgt agggtccttc ttcttgata ctacagacgc ggaccagtt ctcaactcca 420
 ttgggtgtcg ggtttccaga gaagccaatc agtgctgtcg cggtcgctgt tctaaagtcc 480
 gcacgcaccc accgggactc agattctccc cagacgcgca ggatggccgt catggcgccc 540
 cgaacctctg tctgtctact ctggggggcc ctggccctga cccagacctg ggcagggtgag 600
 tgcgggggtcg ggagggaaac ggcctctgcg gggagaagca agggggccgc ctggcggggg 660
 cgcaagaccc ggggaagccgc gccgggagga gggtcgggcg ggtctcagcc actcctctgc 720
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 tgcagcgcac ggggtaccagg ggccacgggg cgctacctg atcgctgtg gatcctgtgt 1560
 gacacacctg taccttgtcc cccagagtca ggggttgga gtcattttct ctggctacac 1620
 acttagtgat ggctgttcac ttggactgac agttaatgtt ggtcagcaag gtgactacaa 1680
 tggttgagtc tcaatggtgt cacttccag gatcatacag ccctaatttt aatatgaact 1740
 caaacacata ttaaattagt tattttccat tccctcctcc attctttgac tacctctctc 1800
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 cttagcttct gagtcccaaa agaaaatgtg cagtcctgtg ctgaggggac cagctctgct 1920
 tttggtcact agtgcgatga cagttgaagt gtcaaacaga cacatagttc actgtcatca 1980
 ttgatttaac tgagtcttg gtagatttca gtttgtcttg ttaattgtgt gatttcttaa 2040
 atcttccaca cagattcccc aaaggcccat gtgacccatc acagcagacc tgaagataaa 2100
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 ttgaatgggg aggagctgat ccaggacatg gagcttgttg agaccaggcc tgcaggggat 2220
 ggaaccttcc agaagtgggc atctgtggtg gtgcctcttg ggaaggagca gtattacaca 2280
 tgccatgtgt accatcaggg gctgcctgag cccctcaccc tgagatgggg taaggagagt 2340

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gacactctag	ggctctgattg	gggaggggca	atgtggacat	gattgggttt	caggaactcc	3060
cagaatcccc	tgtgagttag	tgatgggttg	ttcgaatgtt	gtcttcacag	tgatgggttca	3120
tgaccctcat	tctctagcgt	gaagacagct	gcctggagtg	gacttggtga	cagacaatgt	3180
cttctcatat	ctcctgtgac	atccagagcc	ctcagttctc	tttagtcaag	tgtctgatgt	3240
tccctgtgag	cctatggact	caatgtgaag	aactgtggag	cccagtcac	ccctctacac	3300
caggaccctg	tccctgcact	gctctgtctt	cccttcaca	gccaaccttg	ctggttcagc	3360
caaacactga	gggacatctg	tagcctgtca	gctccatgct	accctgacct	gcaactcctc	3420
acttccacac	tgagaataat	aatttgaatg	taaccttgat	tgttatcatc	ttgacctagg	3480
gctgatttct	tgttaatttc	atggattgag	aatgcttaga	ggttttgttt	gtttgtttga	3540
ttgatttgtt	tttttgaaga	aataaatgat	agatgaataa	acttccagaa	tctgggtcac	3600
tatgctgtgt	gtatctgttg	ggacaggatg	agactgtagc	agctgagtgt	gaacagggtc	3660
gtgccgaggt	gggctcagtt	tgctttgata	tgtgatgggg	ccacacctcc	actgtgtcac	3720
ctctgggctc	tgttccctct	atcactatga	ggcacatgct	gagagtttgt	ggtcacaaag	3780
acacagggaa	ggcctgagcc	ttgccctgtc	cccaggatta	tgagccccca	gggctaaaga	3840
tcagagactc	ggaattc					3857

<210> 34

<211> 1119

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: The DNA region from position 1 to position 618 is derived from human, and the DNA region from position 619 to position 1119 is derived from mouse.

<400> 34

atg gcc gtc atg gcg ccc cga acc ctc gtc ctg cta ctc tcg ggg gcc	48
Met Ala Val Met Ala Pro Arg Thr Leu Val Leu Leu Leu Ser Gly Ala	
5 10 15	
ctg gcc ctg acc cag acc tgg gca ggc tcc cac tcc atg agg tat ttc	96
Leu Ala Leu Thr Gln Thr Trp Ala Gly Ser His Ser Met Arg Tyr Phe	
20 25 30	
tcc aca tcc gtg tcc cgg ccc ggc cgc ggg gag ccc cgc ttc atc gcc	144
Ser Thr Ser Val Ser Arg Pro Gly Arg Gly Glu Pro Arg Phe Ile Ala	
35 40 45	
gtg ggc tac gtg gac gac acg cag ttc gtg cgg ttc gac agc gac gcc	192
Val Gly Tyr Val Asp Asp Thr Gln Phe Val Arg Phe Asp Ser Asp Ala	
50 55 60	
gcg agc cag agg atg gag ccg cgg gcg ccg tgg ata gag cag gag ggg	240
Ala Ser Gln Arg Met Glu Pro Arg Ala Pro Trp Ile Glu Gln Glu Gly	

65	70	75	80	
ccg gag tat tgg gac gag gag aca ggg aaa gtg aag gcc cac tca cag				288
Pro Glu Tyr Trp Asp Glu Glu Thr Gly Lys Val Lys Ala His Ser Gln	85	90	95	
act gac cga gag aac ctg cgg atc gcg ctc cgc tac tac aac cag agc				336
Thr Asp Arg Glu Asn Leu Arg Ile Ala Leu Arg Tyr Tyr Asn Gln Ser	100	105	110	
gag gcc ggt tct cac acc ctc cag atg atg ttt ggc tgc gac gtg ggg				384
Glu Ala Gly Ser His Thr Leu Gln Met Met Phe Gly Cys Asp Val Gly	115	120	125	
tcg gac ggg cgc ttc ctc cgc ggg tac cac cag tac gcc tac gac ggc				432
Ser Asp Gly Arg Phe Leu Arg Gly Tyr His Gln Tyr Ala Tyr Asp Gly	130	135	140	
aag gat tac atc gcc ctg aaa gag gac ctg cgc tct tgg acc gcg gcg				480
Lys Asp Tyr Ile Ala Leu Lys Glu Asp Leu Arg Ser Trp Thr Ala Ala	145	150	155	160
gac atg gcg gct cag atc acc aag cgc aag tgg gag gcg gcc cat gtg				528
Asp Met Ala Ala Gln Ile Thr Lys Arg Lys Trp Glu Ala Ala His Val	165	170	175	
gcg gag cag cag aga gcc tac ctg gag ggc acg tgc gtg gac ggg ctc				576
Ala Glu Gln Gln Arg Ala Tyr Leu Glu Gly Thr Cys Val Asp Gly Leu	180	185	190	
cgc aga tac ctg gag aac ggg aag gag acg ctg cag cgc acg gat tcc				624
Arg Arg Tyr Leu Glu Asn Gly Lys Glu Thr Leu Gln Arg Thr Asp Ser	195	200	205	
cca aag gcc cat gtg acc cat cac agc aga cct gaa gat aaa gtc acc				672
Pro Lys Ala His Val Thr His His Ser Arg Pro Glu Asp Lys Val Thr	210	215	220	
ctg agg tgc tgg gcc ctg ggc ttc tac cct gct gac atc acc ctg acc				720
Leu Arg Cys Trp Ala Leu Gly Phe Tyr Pro Ala Asp Ile Thr Leu Thr	225	230	235	240
tgg cag ttg aat ggg gag gag ctg atc cag gac atg gag ctt gtg gag				768
Trp Gln Leu Asn Gly Glu Glu Leu Ile Gln Asp Met Glu Leu Val Glu	245	250	255	
acc agg cct gca ggg gat gga acc ttc cag aag tgg gca tct gtg gtg				816
Thr Arg Pro Ala Gly Asp Gly Thr Phe Gln Lys Trp Ala Ser Val Val	260	265	270	
gtg cct ctt ggg aag gag cag tat tac aca tgc cat gtg tac cat cag				864
Val Pro Leu Gly Lys Glu Gln Tyr Tyr Thr Cys His Val Tyr His Gln	275	280	285	
ggg ctg cct gag ccc ctc acc ctg aga tgg gag cct cct cca tcc act				912
Gly Leu Pro Glu Pro Leu Thr Leu Arg Trp Glu Pro Pro Pro Ser Thr	290	295	300	

Ser Asp Gly Arg Phe Leu Arg Gly Tyr His Gln Tyr Ala Tyr Asp Gly
 130 135 140
 Lys Asp Tyr Ile Ala Leu Lys Glu Asp Leu Arg Ser Trp Thr Ala Ala
 145 150 155 160
 Asp Met Ala Ala Gln Ile Thr Lys Arg Lys Trp Glu Ala Ala His Val
 165 170 175
 Ala Glu Gln Gln Arg Ala Tyr Leu Glu Gly Thr Cys Val Asp Gly Leu
 180 185 190
 Arg Arg Tyr Leu Glu Asn Gly Lys Glu Thr Leu Gln Arg Thr Asp Ser
 195 200 205
 Pro Lys Ala His Val Thr His His Ser Arg Pro Glu Asp Lys Val Thr
 210 215 220
 Leu Arg Cys Trp Ala Leu Gly Phe Tyr Pro Ala Asp Ile Thr Leu Thr
 225 230 235 240
 Trp Gln Leu Asn Gly Glu Glu Leu Ile Gln Asp Met Glu Leu Val Glu
 245 250 255
 Thr Arg Pro Ala Gly Asp Gly Thr Phe Gln Lys Trp Ala Ser Val Val
 260 265 270
 Val Pro Leu Gly Lys Glu Gln Tyr Tyr Thr Cys His Val Tyr His Gln
 275 280 285
 Gly Leu Pro Glu Pro Leu Thr Leu Arg Trp Glu Pro Pro Pro Ser Thr
 290 295 300
 Val Ser Asn Met Ala Thr Val Ala Val Leu Val Val Leu Gly Ala Ala
 305 310 315 320
 Ile Val Thr Gly Ala Val Val Ala Phe Val Met Lys Met Arg Arg Arg
 325 330 335
 Asn Thr Gly Gly Lys Gly Gly Asp Tyr Ala Leu Ala Pro Gly Ser Gln
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 Thr Ser Asp Leu Ser Leu Pro Asp Cys Lys Val Met Val His Asp Pro
 355 360 365
 His Ser Leu Ala
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<210> 36

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 36
cccaagctta ctctctggca ccaaactcca tgggat 36

<210> 37
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 37
cgggagatct acaggcgatc aggtaggcgc 30

<210> 38
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 38
cgcaggctct cacactattc aggtgatctc 30

<210> 39
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 39
cggaattccg agtctctgat ctttagccct gggggctc 38

<210> 40
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 40
aggacttga ctctgagagg cagggtctt 29

<210> 41
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 41
 catagtcccc tcctttttcca cctgtgagaa 30

 <210> 42
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 42
 cgaaccctcg tcctgctact ctc 23

 <210> 43
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 43
 agcatagtcc cctccttttc cac 23

 <210> 44
 <211> 39
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: PCR primer

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 cccaagcttc gccgaggatg gccgtcatgg cgccccgaa 39

 <210> 45
 <211> 41
 <212> DNA
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 <220>
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 <210> 46
 <211> 9

<212> PRT
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<220>
<223> Synthetic Peptide

<400> 46
Pro Tyr Val Ser Arg Leu Leu Gly Ile
5

<210> 47
<211> 9
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<220>
<223> Synthetic Peptide

<400> 47
Ile Met Pro Lys Ala Gly Leu Leu Ile
5

<210> 48
<211> 9
<212> PRT
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<220>
<223> Synthetic Peptide

<400> 48
Thr Tyr Ala Cys Phe Val Ser Asn Leu
5

<210> 49
<211> 10
<212> PRT
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<400> 49
Gln Tyr Ser Trp Phe Val Asn Gly Thr Phe
5 10

<210> 50
<211> 16
<212> PRT
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<220>
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<400> 50

Ala Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu
1 5 10 15

<210> 51

<211> 9

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<400> 51

Ala Leu Leu Pro Ala Val Pro Ser Leu
1 5

<210> 52

<211> 9

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 52

Asn Gln Met Asn Leu Gly Ala Thr Leu
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<210> 53

<211> 9

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 53

Arg Phe Phe Pro Asn Ala Pro Tyr Leu
1 5

<210> 54

<211> 9

<212> PRT

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<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 54

Arg Trp Phe Pro Asn Ala Pro Tyr Leu
1 5

<210> 55
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

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Arg Phe Pro Gly Val Ala Pro Thr Leu
1 5

<210> 56
<211> 9
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic Peptide

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Arg Met Pro Gly Val Ala Pro Thr Leu
1 5

<210> 57
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

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Arg Trp Pro Gly Val Ala Pro Thr Leu
1 5

<210> 58
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 58
Arg Phe Pro Ser Cys Gln Lys Lys Phe
1 5

<210> 59
<211> 9
<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 59

Arg Met Pro Ser Cys Gln Lys Lys Phe
1 5

<210> 60

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 60

Ala Phe Leu Pro Ala Val Pro Ser Leu
1 5

<210> 61

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

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Ala Met Leu Pro Ala Val Pro Ser Leu
1 5

<210> 62

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 62

Ala Trp Leu Pro Ala Val Pro Ser Leu
1 5

<210> 63

<211> 9

<212> PRT

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 63

Asn Phe Met Asn Leu Gly Ala Thr Leu
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<210> 64

<211> 9

<212> PRT

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<400> 65

Asn Trp Met Asn Leu Gly Ala Thr Leu
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<210> 66

<211> 9

<212> PRT

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 66

Arg Tyr Pro Ser Ser Gln Lys Lys Phe
1 5

<210> 67

<211> 9

<212> PRT

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 67

Arg Tyr Pro Ser Ala Gln Lys Lys Phe
1 5

<210> 68

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<223> Xaa at position 5 stands for Abu.

<400> 68

Arg Tyr Pro Ser Xaa Gln Lys Lys Phe

1

5